

SUPPORT FOR THE AMENDMENT

The amendment of Claim 1 returns the description to the wording as originally filed February 28, 2005 by Preliminary Amendment. Argument supporting the original wording is presented in the Remarks/Arguments section of this paper below.

No new matter is added to this application by entry of this amendment.

Claims 9-17 are active.

REMARKS/ARGUMENTS

Applicants wish to thank Examiner Niland for the indication that Claims 9-17 would be allowable if rewritten or amended to overcome the rejection under 35 U.S.C. 112, first paragraph.

The discussion which follows is directed to overcoming that rejection.

The claimed invention provides process for preparing a hybrid dispersion comprising polyadducts and free-radical addition polymers, by first emulsifying a monomer mixture comprising the monomers of the polyadduct and the monomers of the polymer with water, and then conducting a polyaddition to prepare the polyadducts and a free-radical addition polymerization to prepare the polymers. According to the claimed process, the monomer mixture is emulsified in water before 40% of the monomers of the polyadduct have reacted to form the polyadduct.

The subject of units associated with the % of monomers of the polyadduct has been questioned by the Office. The application as originally filed stated "40% of the monomers" and Applicants respectfully submit that the original wording is correct. As shown below, the 40% is a ratio value and therefore is correctly stated as a number value.

Applicants have stated in Examples 1 and 4 of the specification that:

“Investigation by infrared spectroscopy shows the conversion of the isocyanate groups, . . .” (page 15, lines 22-23 and page 16, lines 5-6).

As indicated in the attached paper entitled “The infrared and Raman spectra of methoxycarbonyl and thiomethoxycarbonyl isocyanates” (Can. J. Chem., Vol. 71, 1993), the isocyanate functional group has a characteristic absorption in the 2280-2250  $\text{cm}^{-1}$  region of the infrared spectrum.

Such an absorption peak can be employed to follow reaction progress by monitoring the IR absorption with time or in comparison to an initial absorption spectrum at an initial time  $t_0$  by comparing absorption values at later times during the progress of the reaction toward completion.

In the present invention the isocyanate groups are reacted to form polyadducts and therefore, the absorption value of any IR absorption such as the one at 2280-225  $\text{cm}^{-1}$  will decrease with time. This is the case because IR absorption is described by Beer’s Law which is expressed as

$$A = a \cdot b \cdot c$$

where A is the absorbance value, a is the absorptivity, a constant specific to the substance being measured at a particular wavelength, b is the thickness of the measurement cell and c is the concentration in moles/liter of the absorbing species.

In the case of the present application measurement of absorbance at a time  $t_0$  would lead to a maximum absorbance due to the isocyanate group as little or no reaction has taken place to remove these groups. Comparing absorbance at some defined time after the beginning of the reaction provides a method to monitor reaction progress by comparison of absorbance value to the value at  $t_0$ .

Applicants respectfully note that a description of Beer’s Law is provided in the attached excerpt from “IR Spectroscopy An Introduction” by Helmut Gunzler and Hans-

Ulrich Gremlich (page 279, Chapter 7). A general description of employing IR to monitor reaction progress is provided in the excerpt beginning on page 134 (Chapter 5).

Applicants respectfully submit that the IR method for analysis of isocyanate group content as described is based on a ratio of an absorbance at some time along the reaction pathway compared to the initial absorbance:

$$A_t/A_0 = a \cdot b \cdot c_t / a \cdot b \cdot c_0.$$

In this analysis the values of a and b in the numerator and denominator are the same and cancel one another, simplifying the equation to

$$A_t/A_0 = c_t / c_0.$$

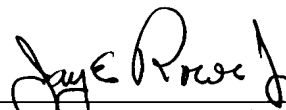
Since both  $c_t$  and  $c_0$  are in units of moles/liter, the units cancel and the measurement term is expressed as a numerical percentage, consistent with the present recitation of the of the claimed invention and the specification and claims as originally filed.

In view of the above, Applicants respectfully request withdrawal of the rejection of Claims 9-17 under 35 U.S.C. 112, first paragraph.

Applicants respectfully submit that the above-identified application is now in condition for allowance and early notice of such action is earnestly solicited.

Respectfully submitted,

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